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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/998,606	11/30/2001	Shanjen Pan	TI-31192	4902

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EXAMINER

NGUYEN, CUONG QUANG

ART UNIT	PAPER NUMBER
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2811

DATE MAILED: 02/10/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/998,606

Applicant(s)

PAN ET AL.

Examiner

Cuong Q Nguyen

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 18-22 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 18-22 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on ____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. ____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) ____.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). ____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

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DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claim 18 is rejected under 35 U.S.C. 103(a) as being unpatentable over Vaartstra (US 6,010,969) in view of Ouellet et al. (US 6,268,620).

Vaartstra discloses a capacitor structure for a memory device comprising: a semiconductor layer (a semiconductor substrate) having a plurality of recesses formed therein; a dielectric layer (14) formed over the semiconductor layer including within plurality of recesses; and a parallel plate capacitor formed over the dielectric layer, wherein the parallel plate capacitor extending into and out of plurality of recesses in the conducting layer. See Vaartstra's Fig.1.

Vaartstra does not teach that the capacitor structure is formed in an analog circuit stage.

Ouellet et al. discloses a capacitor structure could be formed in a memory device or in an analog circuit stage. See Ouellet et al.'s col.1 lines 10-13.

It would have been obvious to one of ordinary skill in the art to form Vaartstra's capacitor structure in an analog circuit stage instead of in a memory device because it

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is known and also taught by Ouellet et al. that the capacitor can be formed in analog circuit stage or in a memory device.

Claim 18-20 and 22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Takao et al. (JP 05029574 A). in view of Ouellet et al. (US 6,268,620).

Regarding claim 18, Takao et al. discloses a capacitor structure for a memory device comprising: a semiconductor layer (a semiconductor substrate) having a plurality of recesses formed therein; a dielectric layer (4) formed over the semiconductor layer including within plurality of recesses; and a parallel plate capacitor formed over the dielectric layer, wherein the parallel plate capacitor extending into and out of plurality of recesses in the conducting layer. See Takao et al.'s Fig.2a.

Takao et al. does not teach that the capacitor structure is formed in an analog circuit stage.

Ouellet et al. discloses a capacitor structure could be formed in a memory device or in an analog circuit stage. See Ouellet et al.'s col.1 lines 10-13.

It would have been obvious to one of ordinary skill in the art to form Takao et al.'s capacitor structure in an analog circuit stage instead of in a memory device because it is known and also taught by Ouellet et al. that the capacitor can be formed in analog circuit stage or in a memory device.

Regarding claims 19 and 20, as shown in Takao et al.'s Fig.2a, the parallel plate capacitor comprises a first polysilicon plate (5) and a second polysilicon plate (7).

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Regarding claim 22, Takao et al. further teaches that a capacitor dielectric (6) is formed by thermally oxidizing the upper surface of the first polysilicon plate. It is inherent that the capacitor dielectric is formed of silicon dioxide.

Claim 21 is rejected under 35 U.S.C. 103(a) as being unpatentable over Takao et al. in view of Ouellet et al. and further in view of Huang et al. (US 6,218,238).

Takao et al. and Ouellet et al. teach all the limitations of claims 18-20 and 22 as shown above. These references do not teach that the insulating layer can be formed of PZT instead of silicon dioxide.

Huang et al. discloses a capacitor structure comprising: a capacitor insulating layer (113) formed between capacitor plates, wherein the capacitor insulating layer can be silicon dioxide or PZT. See Huang et al.'s Fig.1F and col.3 lines 55-60.

It would have been obvious to one of ordinary skill in the art to form the capacitor insulating layer of PZT instead of silicon dioxide as taught by Huang et al. into the device being formed by the combination of Takao et al. and Ouellet et al. because PZT has a higher dielectric constant than silicon dioxide.

Response to Arguments

2. Applicant's arguments with respect to claims 18-22 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

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3. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

4. **Papers related to this application may be submitted to Technology center (TC) 2800 by facsimile transmission. Papers should be faxed to TC 2800 via the TC 2800 Fax center located in Crystal Plaza 4, room 4-C23. The faxing of such papers must conform with the notice published in the Official Gazette, 1096 OG 30 (November 15, 1989). The Group 2811 Fax Center number is (703) 308-7722 and 308-7724. The Group 2811 Fax Center is to be used only for papers related to Group 2811 applications.**

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5. Any inquiry concerning this communication or any earlier communication from the Examiner should be directed to CUONG Q NGUYEN whose telephone number is (703) 308-1293. The Examiner is in the Office generally between the hours of 6:30 AM to 5:00 PM (Eastern Standard Time) Monday through Thursday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor TOM THOMAS who can be reached on (703) 308-2772. The fax phone number for the organization where this application or proceeding is assigned is (703) 308-7722 or 308-7724.

Any inquiry of a general nature or relating to the status of this application should be directed to the Technology Center Receptionists whose telephone number is 308-0956.

A handwritten signature in black ink, appearing to read 'Cuong Nguyen', with a stylized, cursive script.

Cuong Nguyen

February 4, 2003